



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,258	09/30/2003	Seung H. Kang	AYUKAWA 1-4-1-162-30	4017
47396	7590	08/06/2007	EXAMINER	
HITT GAINES, PC LSI Corporation PO BOX 832570 RICHARDSON, TX 75083			LE, THAO X	
			ART UNIT	PAPER NUMBER
			2814	
			NOTIFICATION DATE	DELIVERY MODE
			08/06/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@hittgaines.com

Office Action Summary	Application No. 10/675,258	Applicant(s) KANG ET AL.	
	Examiner Thao X. Le	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/17/07 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 30-31, 34-40, 43-47 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6798073 to Lin et al.

Regarding claims 30, 34-35, 39, 43-44, Lin discloses an integrated circuit (IC) device in fig. 17 or 23 comprising: a metallization interconnect system 522, fig. 9, and 580, fig. 12, overlying the semiconductor substrate 510, col. 11 line 20, the metallization

Art Unit: 2814

interconnect system including multiple first and second interconnect feature 580, col. 12 line 10, (left and right portions) located within a dielectric layer 541, col. 12 line 5, a bond pad level 584, col. 12 line 32, overlying the metallization interconnect system, fig. 16, the bond pad level comprising a contact pad 547, col. 12 line 57, and at least a portion of a second interconnect structure (the remaining portion of 584), fig. 17, wherein the contact pad is configured for connection external to the integrated circuit device and is in contact with the first interconnect feature 580; and the second interconnect structure 584 form a single conductive feature with the contact pad 547 is in contact with the second interconnect feature 580, fig. 17, and a passivation layer 590, col. 12 line 49, overlying at least a portion of the bond pad level 584 to expose the contact pad 547 and protect the second interconnect structure.

With respect to “the contact pad is configured for connection external to the integrated circuit device” and “protect the second interconnect structure” do not carry weight because the limitations are either function or intended use that do not limit the claim to a particular structure, MPEP 2111.04; thus structure of Lin is capable of performing the same function.

With respect to the process limitations “by a bond wire attached thereto” or “solder bump attached thereto” do not carry weight in a claim drawn to structure. In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985), MPEP 2113.

With respect to plurality of contact pads, the continuous structure of Lin has plurality of pads.

Regarding claims 31, 40, Lin discloses the IC device wherein the second interconnect structure is a power bus (any interconnection can be a power bus).

Regarding claims 36, 45, Lin discloses the IC device wherein a material of the metallization interconnect system comprises copper, col. 15 line 1, and contact pad and second interconnect structure comprises aluminum, col. 15 line 2, further including a barrier material 582 between the copper 580 and the aluminum 584 in the region where the second interconnect structure 584 is in contact with the second interconnect structures, fig. 16.

Regarding claims 37, 46, Lin discloses the IC device wherein the metallization interconnect system further comprises substantially horizontal conductive runners 527, and substantially vertical conductive vias interconnecting overlying and underlying conductive runners, fig. 17.

Regarding claims 38, 47 Lin discloses the IC further comprising a dielectric layer 541 or 741, fig. 23, disposed between the second interconnect structure 584 or 780 and the dielectric layer 502, fig. 9.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 32-33, 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6798073 to Lin et al. in view of US 6229221 to Kloen et al.

Regarding claim 32-33, 41-42, Lin does not disclose the integrated circuit device wherein a plane of an upper surface of the contact pad is not coplanar with a plane of an upper surface of the second interconnect structure; and wherein the plane of the second interconnect structure is above the plane of the contact pad.

However, Kloen discloses a integrated circuit device in fig. 2 comprising a interconnect structure 3 wherein a plane of an upper surface of the contact pad 23 is not coplanar with a plane of an upper surface of the second interconnect structure 22; and wherein the plane of the second interconnect structure 22 is above the plane of the contact pad 23. At the time the invention was made; it would have been obvious to a person having ordinary skill in the art to use the teaching of the interconnect structure of Kloen in the IC device of Lin, because The configuration of the claimed interconnection structure was a matter of

choice, which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant; thus that the particular claimed configuration is one of numerous configurations a person of ordinary skill in the art would find obvious for the purpose of providing mating surfaces; In re Dailey 149 USPQ 47, 50 (CCPA 1966). See also Glue Co. v. Upton 97 US 3,24 (USSC 1878). MPEP 2144.04.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 2814

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

31 July 2007

/Thao X Le/

Primary Examiner, Art Unit 2814